

TABLE 12. PROPERTIES OF GASES^a

GAS	CHEMICAL SYMBOL	NUMBER OF ATOMS	MOLECULAR WEIGHT		WEIGHT IN POUND OF 1 CU. FT. AT ATMOSPHERIC PRESSURE		DENSITY RELATIVE TO AIR	GAS CONSTANT, R	SPECIFIC HEAT PER POUND		SPECIFIC HEAT PER CUBIC FOOT AT ATMOSPHERIC PRESSURE AND 62 DEG. FAHR.		$k = \frac{c_p}{c_v}$
			Approximate	Exact	At 62 deg. Fahr.	At 32 deg. Fahr.			c_v	c_p	c_p	c_v	
Helium	He	1	4.0	4.0	0.0105	0.0112	0.137	386.0	1.25	0.75	0.0131	0.0079	1.66
Argon	Ar	1	40.0	39.9	0.1048	0.1112	1.378	38.70	0.124	0.075	0.0131	0.0079	1.66
Oxygen	O ₂	2	29.0	28.95	0.0761	0.0807	1	53.34	0.241	0.171	0.0183	0.0130	1.40
Nitrogen	N ₂	2	32.0	32	0.0840	0.0892	1.105	48.25	0.217	0.153	0.0182	0.0130	1.40
Hydrogen	H ₂	2	28.0	28.08	0.0737	0.0783	0.970	54.99	0.247	0.176	0.0182	0.0130	1.40
Nitric oxide	NO	2	2.0	2.016	0.00529	0.00562	0.0696	765.86	3.42	2.44	0.0181	0.0129	1.40
Carbon monoxide	CO	2	30.0	30.04	0.0789	0.0838	1.038	51.40	0.231	0.165	0.0183	0.0130	1.40
Hydrochloric acid	HCl	2	28.0	28.00	0.0734	0.0780	0.968	55.14	0.243	0.172	0.0180	0.0126	1.41
Carbon dioxide	CO ₂	3	36.5	36.45	0.0958	0.1017	1.260	42.35	0.191	0.136	0.0183	0.0130	1.40
Nitrous oxide	N ₂ O	3	44.0	44.00	0.1156	0.1227	1.520	35.09	0.210	0.160	0.0243	0.0185	1.31
Sulphur dioxide	SO ₂	3	44.0	44.08	0.1157	0.1229	1.522	35.03	0.221	0.171	0.0256	0.0198	1.26
Ammonia	NH ₃	4	64.0	64.06	0.1684	0.1786	2.213	24.10	0.154	0.123	0.0260	0.0207	1.25
Acetylene	C ₂ H ₂	4	17.0	17.06	0.04483	0.0476	0.590	90.50	0.523	0.399	0.0234	0.0178	1.31
Methyl chloride	CH ₃ Cl	5	26.0	26.02	0.0684	0.0725	0.899	59.34	0.350	0.270	0.024	0.0185	1.28
Methane	CH ₄	5	50.5	50.47	0.1326	0.1407	1.744	30.59	0.24	0.20	0.032	0.0265	1.20
Ethylene	C ₂ H ₄	6	16.0	16.03	0.0421	0.0447	0.554	96.31	0.593	0.450	0.025	0.019	1.32
			28.0	28.03	0.0738	0.0780	0.969	55.08	0.40	0.33	0.029	0.024	1.20

^aFrom Marks' Mechanical Engineers' Handbook.

CHAPTER 34

SYMBOLS AND ABBREVIATIONS

Symbols for Heat, Thermodynamics and Hydraulics; Abbreviations; Drafting Room Practice.

IN this chapter there will be found the symbols for drawings adopted by the A. S. H. V. E. in its CODE OF MINIMUM REQUIREMENTS FOR THE HEATING AND VENTILATION OF BUILDINGS as well as A. S. A.¹ tentative standard symbols and abbreviations for scientific and engineering terms, also some recommended standards for drafting room practice.

The following distinction between symbols and abbreviations is made: A symbol is a letter or sign used in a formula as a substitute for any numerical value. A shortened expression for a name or a unit is an abbreviation and not a symbol.

SYMBOLS FOR HEATING AND VENTILATING DRAWINGS²

1. The objects of this standard set of symbols are to insure the correct interpretation of drawings and to conserve drafting room time by establishing simple and unmistakable symbols for the component parts of the heating and ventilating systems. In preparing the list of symbols an effort has been made to follow existing practice in so far as possible but the list cannot be expected to match exactly the existing practice of every drafting room.

2. Simplicity, ease of execution and unmistakable identification were carefully considered in selecting the symbols. Uncommon fittings and appliances such as vacuum pumps, separators, etc., have purposely been omitted in order to produce a list which can be easily remembered. It is assumed that when the scale of the drawing permits, the valves and fittings will be drawn to scale and a conventional representation is then unnecessary.

3. High pressure steam supply pipe

4. Low pressure steam supply pipe

5. Hot water pipe—flow

6. Return pipe—steam or water

7. Air vent line

¹The compilation of these standards is under the supervision of the American Standards Association, and the sponsor organizations include: American Association for the Advancement of Science; American Institute of Electrical Engineers; American Society of Civil Engineers; Society for the Promotion of Engineering Education, and American Society of Mechanical Engineers.

²From A. S. H. V. E. CODE OF MINIMUM REQUIREMENTS FOR THE HEATING AND VENTILATION OF BUILDINGS.